

THE
EXCELSIOR TROUSERS CUTTER,
WITH A TREATISE ON
DEFECTS AND REMEDIES
IN TROUSERS

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THE

EXCELSIOR TROUSERS CUTTER

WITH A TREATISE

ON

DEFECTS AND REMEDIES

IN TROUSERS.

FULLY ILLUSTRATED

WITH NINETEEN DIAGRAMS.

BY

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CHICAGO

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PREFACE

In presenting this work to the trade we realize that our efforts in this direction will be criticized by some, endorsed by others, and used by those who are in the line of progress. It is an easy matter for an intelligent, or even an illiterate, man to condemn a work of this nature, but it is another and entirely different thing to disprove the principles embodied in the system set forth. It is not the interest of the authors of this volume to condemn other works on trousers cutting that have been published, but we do affirm that no work ever published in America covers the ground so thoroughly and arrives at correct conclusions in an easier, more scientific and practical way than the present volume. The reason for this is the fact that the authors are men of long experience in the trade as practical tailors and cutters and have reduced their actual experience at the cutting board to a system we claim not excelled, if equaled, by any other author. This may seem boasting to some, but to satisfy yourselves of our claim it will be expedient to thoroughly examine our work and test it by actual experience, and we believe the present work will be endorsed by the trade as a *rare mecum* in their work.

We do not insist that you should utilize every opinion or illustration it contains, if they are not in harmony with your views, but they may lead you into new and unexplored fields, so that your actual experience will be increased. Neither do we insist that you should abandon your present method of trousers cutting if it is giving you that satisfaction that it ought to give, and we presume that all who read this volume are sufficiently well informed on the scientific principles that underly correct trousers cutting, but that the facts here set forth may cause you to inquire further into the *cause* and *effect* of trousers cutting.

If you know certain effects in your trousers to exist, it is the part of the wise man to endeavor to locate the cause, and we simply present this volume to the trade with the hope that it will assist those who are in trouble, and the belief that it will lead you into new channels of development and proficiency.

Feeling confident that when the trade are fully aware of the usefulness of the present volume they will willingly peruse its pages carefully, believing that those who seek shall find the jewels that are still hidden in the fundamental principles of scientific cutting.

ROBERT PHILLIPS, Publisher.

PART FIRST.

The Excelsior Trouser System is taught at the Custom Cutter School of Cutting, illustrated by scientific diagrams showing the symmetrical relation of the legs in a standing, moving and sitting position.

CHAPTER I.

INTRODUCTION.

Notwithstanding the many valuable and ably written books on trousers cutting that have been published, many of which have become standard text books, there still remain many valuable and reliable things to be said, and problems to be elucidated for the benefit of the present and coming generations. We do not hope, by the publication of the present volume, to scatter all the darkness and move scientific theories that are believed by many in our profession, but we do hope to so interest and, if per chance, enlighten a few who are seeking for more light, that a higher and a more advance position will be taken in the art of trousers cutting.

Part II of this volume so thoroughly covers the ground on the question of defects and causes that it is needless for us to repeat here many of the principles there set forth, in different phraseology and by different illustrations. Suffice to say that the main features and principles set forth in this work are the joint opinions of the authors, who have endeavored to be as lucid as possible in their several parts.

The reader will observe that the authors start out from different standpoints in the systems given, and while Mr. Langridge may not use the same divisions as Mr. Phillips, the conclusions will be found to be in unison, and either system will give results that will be satisfactory to the student. For the style and fit of trousers worn in America the American cutter will necessarily make some slight changes in Mr. Langridge's method, while on the other hand the English cutter will change to some

extent the Excelsior method, so that it may be better adapted to the style of trousers worn in England. But, as we said in the preface, this work's chief use will doubtless be to assist the operator to discover where defects are and to give him illustrations of how to remedy them to the satisfaction of himself and the comfort of his clients.

So far as we know no work of this nature has ever been published in America, and we are convinced that many in our profession will hail with delight this volume of useful information, and we believe it will be given an honored place in the technical libraries of the craft.

One of the great hindrances to the better understanding of the principles that underlie scientific trousers cutting is the fact that most of our authors have devoted most of their time to coats and vests and other garments for the upper or trunk part of the body—hence, to a large extent trousers cutting has been neglected in a scientific sense. Of recent years, however, more attention has been given to the study of the subject and now quite a number of good and reliable methods have been published. Realizing that our readers would rather study fundamental and scientific principles than the publisher's personal opinions on trousers cutting on general principles, we therefore approach the subject, believing that when they have given it careful consideration and practical tests they will readily exclaim that the methods set forth and the manner in which the problems are handled are Excelsior.



CHAPTER II.

ATTITUDE.

The primary attitude of man is to stand upright, hence, the first principle to be considered is, can we lay down a principle in mathematical calculation by measurements of the legs to be a fundamental in the problem of trousers cutting? We answer, if we measure the extreme parts that are to be covered by the garment we propose producing, we should be able to do so, provided these parts are in proportion to each other, as well as the intermediate or connecting sections.

To correctly cover the legs in an upright attitude would not be a difficult problem if that part of the anatomy always remained in that position, but observation has taught us that the lower part changes in attitude according to the will of the upper part, or we might say the intellectual or will part. The legs of themselves without a guiding influence would be of little use to mankind other than simply filling the intermediate between the body and the ground, if it were not for their joint action with the trunk or upper-section and the will power; hence, we say that the attitude changes in its lower parts at the will of man to meet the requirements of balance or equilibrium when moving.

MOTION.

The movement of the legs in their normal condition is forward with a slight tendency to the outward; or, as we would say, the leg in motion assumes a centrifugal position; which position becomes absolutely necessary that the upper and heavier part of the whole (or upper section of the body) may be in balance or in harmony with the section that gives locomotion to the entire body. It is, we believe, a

lack of knowledge on this problem that causes so many defects to be apparent in modern trousers, and which must forever remain so long as many of the fallacies in the construction of the systems are allowed to go by default.

If we can establish the hypothesis that mankind was not made to stand but to have a forward motion according to the location of each muscle and bone, and to be in a right angle in a sitting position, which is the extreme of any position of the body then, we can easily arrange a method or system on a scientific basis that we believe will meet the requirements of the various attitudes the body assumes in complying with the intellectual or will power of the individual.

OBSERVATION.

Any observing cutter can demonstrate for himself the truth of the foregoing by observing the attitude and motion of a man when walking. It is an admitted fact that the larger the individual becomes at the waist the more he will open his feet when in motion. This leads us to mention close and open cut, which we believe is not fully understood by a large per cent of cutters, and has given no end of trouble to many a man who realized something was wrong, yet he failed to locate the cause.

Several attempts have been made in the past to discover the distance the feet are apart both in a standing and walking position, but thus far no correct method has been laid down that has been in harmony with actual experience, hence we propose in the following chapter to give a rule or method that we have used for a number of years with success.

CHAPTER III.

THE INSTEP AND HEEL.

Various rules have been given to locate correctly the instep and heels both in a standing and walking position. Some by actual measurement and others by a division of the seat

and waist measures, but we have found such a difference of opinion on the result that we have made a mathematical calculation as a guide to our readers in studying out the various sizes as follows:

NORMAL MEASURES.

SEAT	ANKLE	SEAT	ANKLE	SEAT	ANKLE
30	7 $\frac{7}{8}$	37	9 $\frac{5}{8}$	44	11 $\frac{3}{8}$
31	8 $\frac{1}{8}$	38	9 $\frac{7}{8}$	45	11 $\frac{5}{8}$
32	8 $\frac{3}{8}$	39	10 $\frac{1}{8}$	46	11 $\frac{7}{8}$
33	8 $\frac{5}{8}$	40	10 $\frac{3}{8}$	47	12 $\frac{1}{8}$
34	8 $\frac{7}{8}$	41	10 $\frac{5}{8}$	48	12 $\frac{3}{8}$
35	9 $\frac{1}{8}$	42	10 $\frac{7}{8}$	49	12 $\frac{5}{8}$
36	9 $\frac{3}{8}$	43	11 $\frac{1}{8}$	50	12 $\frac{7}{8}$

You will find in another part of this volume the statement made that the distance the heels are apart is one-ninth of the seat quantity. This is practically correct for all general purposes, but as we begin the division of the above measures you will discover that the measurements here given exceeds about three-eights of an inch the quantity given later on. In the succeeding chapter the statement is merely made as a fact, while in the present we propose using the actual measures here given to establish scientifically the method or system under discussion. We wish to state further before giving the mathematical reasons as the basis of our system that the larger the individual becomes in the waist the further the feet are apart, both in a standing and a walking position. This is owing to the fact that as the greatest increase is in front the body becomes more erect; hence, the back length is shortened and the front becomes longer, therefore the feet are placed further apart so as to give the proper balance to the upper part of the body.

Diagram 1.

THE NUDE FIGURE.

The dotted lines represent the legs drawn on the basis of a 32 waist, 36 seat, 9 $\frac{3}{8}$ ankle and 31 $\frac{1}{4}$ leg. According to the table already given the ankle of a normal figure is three-eighths of an inch more than one-fourth of the circumference of seat measure; hence, on the division of seat and ankle measures we propose working out the system.

Draw a line C C C for center. From C to D is one-fourth of circumference (36) and two seams ($\frac{1}{8}$) for rise; from D to E leg length (31 $\frac{1}{4}$). To locate knee go up from E one-half of leg measure and one and one-half inch added, as at 6; square line across bottom at E, also at D and C at waist by line C C. D

to F is one-fourth of circumference less one-half inch, or eight and one-half, and square up to G. From G to H is one inch more than from D to E. From F to J is one-fourth seat, from F to K is one-third seat on halves; to find construction line, measure from E to L one-third of close ankle measure (3 $\frac{1}{8}$); now draw a line from L to J. To find balance line, measure from L to M one-twelfth of waist and draw line from M through K to waist. These lines ought to cross a little below knee pan as at *; this gives us four and one-half inches (or a total of nine) from E to M, which is the separation of the feet in a walking or sitting position, the heels being one inch on each side of E closer than the instep, or a total of seven inches. We now pass to the right leg

Diagram 2,

which is here represented as in a walking position. To draft the trousers to be in harmony with this position lay square on touching F, D and H, and draw lines 2 and 3. We now find that line 2 at 4 has dropped below the original line D F about three-fourth of an inch; continue line 2 from 4 to 5, which is one-third of the distance from D to F. Six is half the distance between 4 and 5, and draw line from 6 to H for front fly-line, add five-eighths from 5 to 7 and go up from 6 to 8 one-twelfth and shape front as per diagram.

Square line 9 by line 3 and G and go back from H at front waist to X one-fourth of waist measure and shape hip of forepart.

To find construction line, square down from K by line 2, 4, to W; from W to N is one-eighth of seat; from W to O is one-sixth, and from O to P is 2 $\frac{1}{2}$ inches until the bottom on these divisions reaches a total of eight, then add only two or two and one-fourth, and in large sizes sometimes as low as one and one-half. Draw line from P to one-fourth inch inside of 5 for leg seam, and from N to F for side seam. Draw knee line by leg seam through center of knee pan and make knee to measure which in this case is nine and one-quarter, or one-half of knee size, which in this case is inside. M being the center of fore-part, L being one inch from M has become the center of heels, which is one inch less than one-third of angle measure from the fact that you have dropped the fork one inch.

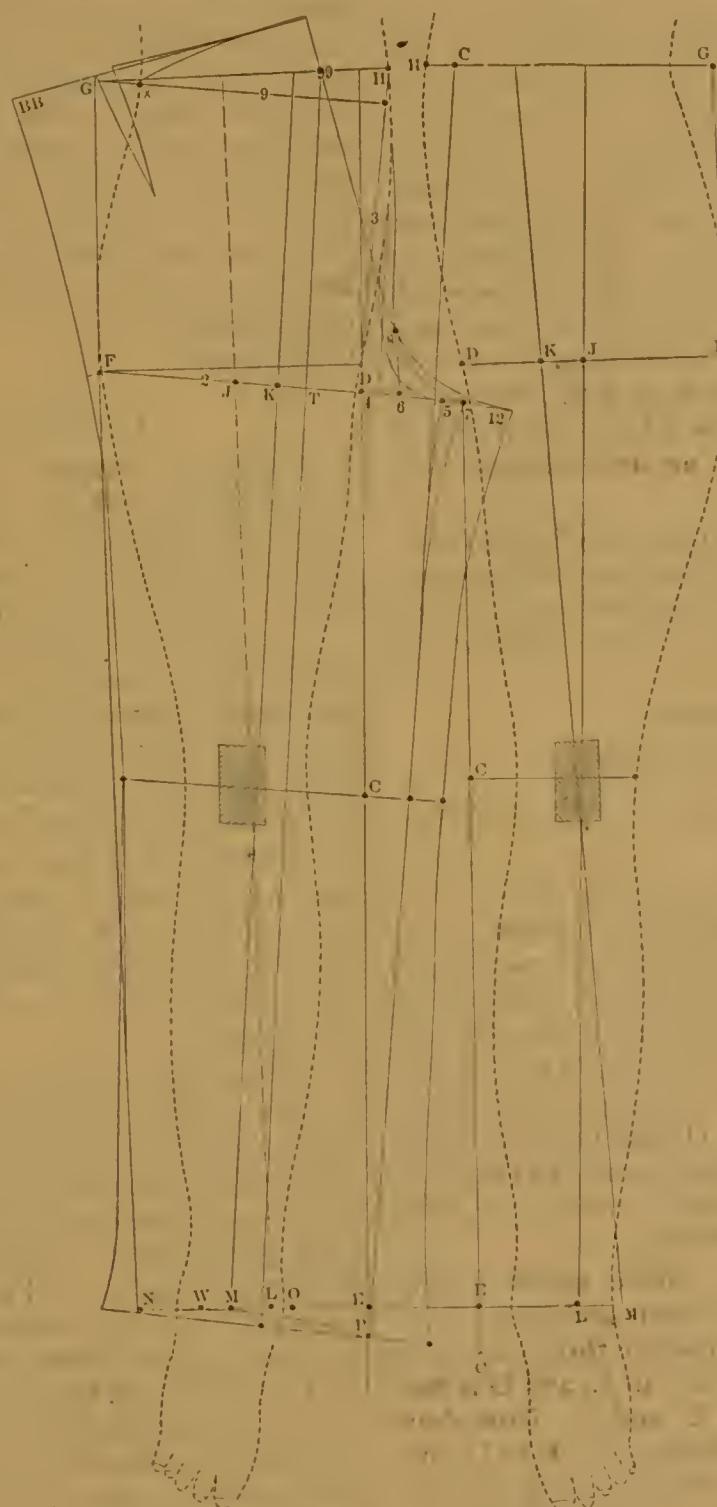


Diagram 2.

Diagram 1.

THE BACK PART.

Measure from M to L one inch and from K to T the same and draw back balance line; divide bottom quantity each side of L with seams added. Go out from 7 to 12 one and one-half inch always and sweep from 7 by knee of forepart; make back part one inch wider than forepart at knee at inseam and shape as per diagram; make knee to measure, adding one inch for seams. To find seat angle lay square on 8 and back balance line where it crosses waist line at 99. To find height of back part sweep from X by 4 and, from X by F to find height at side seam at B B. Now apply waist and seat measures, adding two inches at each place for make up, and take one-half inch V at waist.

As this method is rather complicated for ordinary use we herewith present you the system as used at the cutting board for several years and which is virtually the same as shown by Diagram 3.

Diagram 3.

NORMAL TROUSERS.

The measures: Leg 32, waist 34, seat 38, knee 19, bottom 18.

HOW TO DRAFT THE TOP SIDES.

Line O O represents edge of paper and is one-fourth of seat measure and two seams added, ten inches; O to $\frac{1}{4}$ is always one-fourth inch, and draw dotted line; from $\frac{1}{4}$ to C is half of seat, less one-half inch, nine; O to D is one inch more than from $\frac{1}{4}$ to C; now lay square on touching $\frac{1}{4}$, C and D, and draw fork and front line and square line from D to O by line C D, and go from D to S one-half of waist measure, eight and one-half.

Continue fork line, divide quantity from $\frac{1}{4}$ to C into three equal parts and add one of them from C to E, in this size three inches; F is half the distance from C to E, and G is half the distance between C and F. Now draw these lines up to D. Go up from F to U one-twelfth of seat and add from E to H five-eighths always for dress, and shape fork as per diagram.

To find construction and balance lines in legs, go out from $\frac{1}{4}$ to K one-third of seat and

square down to I by line $\frac{1}{4}$ and C from K to I, thirty-two, and square all lines by line I-K; from I to J is one-eighth seat; from I to L is one-sixth seat; from L to M is two and one-half inches. Go out from J to P one-half inch less than width of fore part at bottom, draw side seam as per dotted line from J to $\frac{1}{4}$; for front balance, draw line from P through K to waist, and from M to one-fourth inch inside of E for leg seam, which locates N always; hollow bottom about one-half inch and shape dress, and make to measure from N to R half of knee size.

THE UNDERSIDES.

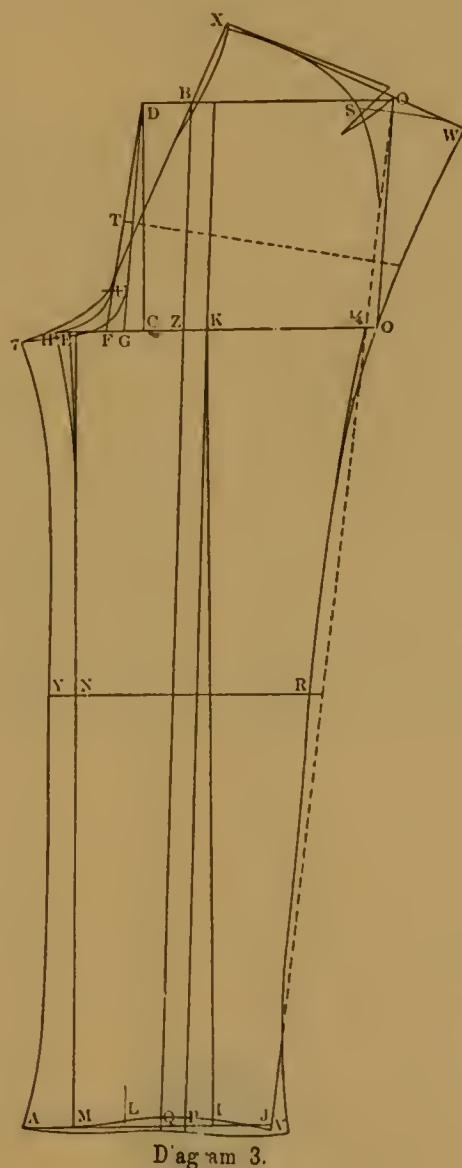
Lay cut out forepart on and go out from K to Z one inch, and from P to Q one inch, and draw back balance line from Q through Z to B; divide the balance of bottom quantity each side of Q with one inch added for seams, e. g.

(FOR EXAMPLE):

If this bottom is eighteen we have made for part eight, subtract this from eighteen leaving ten and one inch added for seams or eleven total—equal on each side of Q five and one-half inches; from Q to A and Q to V.

N to Y is one inch always, and H to 7 is one and one-half inches always in ordinary sizes; sweep from E by N to 7 so as to shorten distance from Y to 7, which should be stretched to length of forepart, and shape leg seam as represented.

To find seat angle, draw a line from U to B on back balance; to find X sweep by C, and to find W sweep from one-fourth inch below S by O, which is one-fourth inch below $\frac{1}{4}$. T is about one-fourth of seat from F and draw dotted line by line F-D. Apply seat measure from T and seat angle line and two inches for seams and ease, and waist measure from D to S and X to W and two inches, and take out one-half inch V. Hollow a little from X to a little below B and continue from U to 7 as represented. The back part should be stretched a little with iron between 7 and U, R and O and W, make knee to measure and one inch for seams and make back parts one-fourth inch longer than fronts at bottom as per diagram.



D'agam 3.

NORMAL TROUSERS.

Diagram 4.

ABNORMAL TROUSERS.

The measures: Leg 32, waist 42, seat 42, knee 20, bottom 18½.

Proceed as in Diagram 3 until you get to the division of seat measure to find distance from $\frac{1}{4}$ to C as follows: For every inch above a forty seat reduce the fork one-eighth of an inch and advance the same quantity at D at front waist, e. g. One-half of 21 = 10½ less $\frac{1}{2}$ inch = 10 less 2-8 = 9 $\frac{3}{4}$ total quantity from $\frac{1}{4}$ to C, or equal to about a forty-one seat if cut on the proportions of ordinary sizes. I now go out from O to D one inch more than distance from $\frac{1}{4}$ to C and also add the two-eights reduced, e. g.; $9\frac{3}{4} + 1 = 10\frac{3}{4} + 2-8 = 11$ total quantity from O to D. Now lay square on touching $\frac{1}{4}$, C and D and draw fork and front waist line. Make waist line from D to O parallel with fork line. Proceed as described in Diagram 3 for fork quantities and to get round for abdomen add on in front from D in advance of line D-C one-eighth for each size reduced at fork, thus you have added twice the quantity you reduced at C. Now shape front of fly and fork. To get correct height of waist at 6, subtract the proportionate waist size,

which should have been four inches smaller than seat from the actual waist size, thus 38 from 42 = 4, showing four inches to be the disproportion. Now divide four into three equal parts and add one part at top of waist from D to 6, which gives the correct use for this size. You now proceed to finish forepart as per Diagram 3.

THE UNDERSIDES.

The only difference we make in the undersides is, add from H to 7 one and three-fourth to two and even two and one-fourth inches for fork room, and add two and one-half inches to seat measure, and one inch more than waist measure from X to W, but take out no V.

You can readily see that Diagram 4 is considerably more open in the legs than Diagram 3, from the fact that the front waist is more advanced and the fork is lower, thereby opening the legs, giving greater length from fork to waist in front, and consequently the side seam is shortened, thus proving that the feet are further apart, which fact has become an absolute necessity to give balance to the abnormal section above.



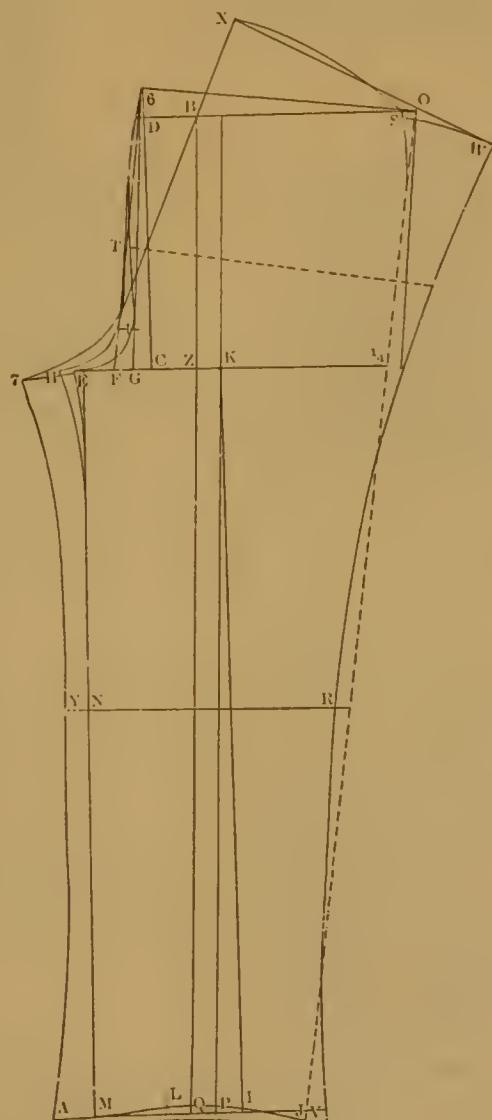


Diagram 4.

ABNORMAL TROUSERS.

Diagram 5.

KNEE BREECHES.

The measures: Leg 14-16½-19, waist 34, seat 38, thigh 21, knee 14½, upper calf 15, between upper calf and knee, as at L, 13½.

THE FOREPARTS.

Proceed as in Diagram 3, until the entire top of forepart is complete. To get construction line for bottom, continue line D-C to N-L and Y. Apply leg lengths and go out from N and L one inch, and at Y one and one-fourth, and shape inside leg seam to bottom. Apply half of knee and upper calf measure from 1 to A and from 1½ to R, and shape outside seam, having placed one-half of thigh measure three inches below fork as per dotted line, and add a little round from R to 1¼.

THE UNDERSIDES.

Lay square on K, U and B and draw seat angle and add a little round on seat opposite at T, advancing one-half inch at 3 from U, and continue to 7. The reason of adding at 3 one-half inch or making seat angle straighter is, that as the gent seats himself in the saddle his knees approach nearer to a right angle than they were in a standing or walking position; hence, the necessity for a more open cut and a straighter seat angle. Apply measures making the same increase as in a fat man's trousers and take V out at waist as represented. The undersides should be well stretched where marked —— so as to reduce the surplus cloth when in a standing and sitting position.

Now apply lower or knee measures and three-fourths for seams only; they ought to be made quite close around knee, as the positions of the knees soon cause the material to stretch at those parts, and unless they fit perfectly they are apt to ride up a little with the motion of the horse. Hollow the back parts as represented by dotted line 2 and put five buttons at knee, the top button being on a direct line with knee.

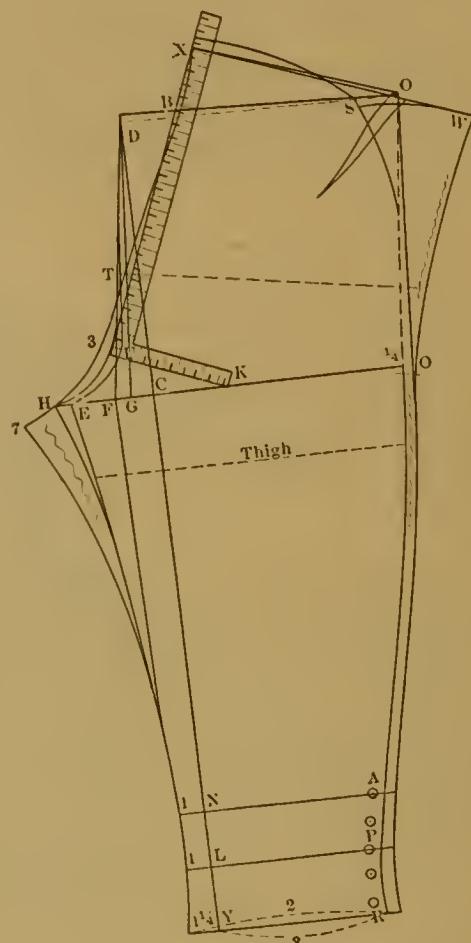


Diagram 5.

KNEE BREECHES.

HOW TO MEASURE.

Take all lengths same as for trousers, only, of course, taking the lengths required. The waist and seat measures should be taken rather closely over the trousers, but the thigh, knee, small and upper calf should be taken medium close over the underclothing, as it is never safe to measure over a garment that does not fit the leg closely. When the measures are taken over the underclothing the seams must be added for making up.

PART SECOND.

DEFECTS AND REMEDIES IN TROUSERS CUTTING.

Unfortunately for those who have to construct trousers for all sorts and conditions of men, the balance is too often on the wrong side in the matter of defects, and the trouble is very often largely increased in the endeavor to establish a cure. It often happens, too, when we most congratulate ourselves upon having attained success, that we experience the greatest blow to our hopes, and the little confidence we had in ourselves vanishes into thin air.

A series of defects in trousers are the result of various causes, generally traceable to the shortcomings of the operator himself, from the fact of not having a scientific basis to guide him, nor the power or skill necessary to develop the intricacies of construction.

There are several forms of defect in trouser cutting, assuming proportions to a greater or lesser degree, according to the nearness of approach to the correct principles that underlie all scientific conclusions.

We are told by some that defects mainly arise from existing differences in form and figure, but this style of argument will scarcely hold water, from the fact that no reliable method has yet been discovered which will produce a perfect fitting garment, even for the most perfect form of figure.

Of course we are aware that there are differences in form and size as well, but still the construction of man in all his parts is simply the repetition of another man, the difference being only in form and size, the general attitude and motion being all in the same direction.

Again, if it were possible to produce a method that would meet successfully the requirements of one form of figure, the difficulty should not be very great in its adaptation to another form of figure, seeing that the attitude and motions of man are in the same direction and as nearly alike as possible. Providing this to be the case, then the primary cause of defect lies in the secret of construction, made apparent by the motions of the body, rather than in the narrow differences arising from any particular peculiarity in size or form.

SAME SIZE MEASURES.

It is true that some figures measuring actually the same size are not always of the same actual development, but, after all, this is simply a process of give and take, the changes being chiefly confined to the region of seat or fork (the addition or reduction following the outline of figure), but whatever difference might exist in this direction, the effect upon general construction being so small, it follows that this form of argument will not support in the smallest degree the idea that defects, of any moment, arise from any peculiarity of size or form.

It is very clear then, supported by this evidence, that the common source of defects is the absence of that yet far distant ideal—a perfectly constructed system subject to the various motions of the body.

Defective construction in trousers cutting leads, of course, to an unequal distribution of material, and this in turn is the cause of all our trouble in the matter of defects. Either the

top sides are too open or too close—the operator very often not knowing which—the undersides, of course, following suit, and the harmony of the whole is not exactly what we could wish.

But whatever be the opinion of an individual upon this question, the differences of opinion generally are so many and varied, that notions and theories, peculiarities of form and defects, get so hopelessly mixed up, that to unravel this great mystery to the satisfaction of all is a great task indeed.

With these preliminary remarks, made by way of introduction, I will proceed to the subject under discussion and endeavor to reduce to a demonstration all the points in question, in the order they come.

A RIGHT METHOD.

In the first place, what is the best and most useful system in the main for producing trousers?

This is the most important question connected with the whole subject, because upon the solution of it hangs the true remedy for all defects. If one could point out the best system of construction in trousers, and could lay it down to the satisfaction of all cutters, there would be really no necessity to proceed with the other problems, as that point of perfection would be reached when defects would be spoken of as things of the past.

Then again, if we carefully consider the question of construction in trousers, one might be bold enough to assert that there is every possibility of discovering a perfect system, from the fact that we often meet with first-class fitting trousers, and upon this evidence alone the presumption would be that there is something beyond which would point to a nearer perfection than what might be termed first-class.

Of course the best system in the main for producing trousers would be a method based upon scientific principles which would describe in systematic form the exact requirements of the figure. Now the requirements of the figure are simply a demand for a covering that will at the same time be easy and graceful, limited, of course, to a given size.

One of the primary conditions of trousers cutting is to secure the exact size or measures of the figure; as in all cutting the possession of correct measures is absolutely necessary if perfect results are desired.

First of all then, before we attempt to construct a system, we must be certain of the correctness of the measures and we must satisfy ourselves that we perfectly understand what is meant by "attitude" and "motion," for the attitude must determine the direction of the figure, which the lines of construction must also follow the motions directing the intermediates or stations, where a disturbance of material takes place, resulting from the natural movements of the figure. Although it is possible for a figure to assume almost every conceivable position, still the limit is reached at a right angle.

It therefore follows that in the construction of trousers we have two extreme provisions to make. Firstly, to provide for the natural attitude. Secondly, to provide for the full extent of angle required in the act of sitting down. If we had only to consider the primary attitude of man, that of standing bolt upright, our difficulties would not be very great, as trousers constructed on the plumb principle would meet the requirements of this isolated position, but from the fact of the figure's movements in the breaking up of straight lines comes all the creases and defects so visibly apparent in the majority of our trousers.

In the construction of a perfect trousers system there are several important points which demand serious attention and consideration. First of all comes the figure itself, with a limited outline of form and size, the exact dimensions being described by the inch tape and entered in the order book. If we take a review of the figure, whether large or small, we find that there are certain straight lines running through the figure, which may be termed imaginary. For instance, we might imagine a line say upwards and downwards from A terminating inside the foot (See Diagram 1.) Then we might imagine another upwards and downwards from B, cutting centre of knee and terminating at the instep. There is also the fly line, which, if plumbed downwards,

would find the centre of the distance the heels are apart—unless in the case of malformation.

I find in experimenting, testing and comparing, that there is a certain "ratio" the heels are apart and although not scientifically correct to the fraction of an inch, yet for all practical purposes, the distance may be set down at one-ninth of the total seat and would correspond with O-B (Diagram 1). For example, for a thirty-six seat the heels would be about four inches apart, and in a fifty-four seat they would be six inches apart, which is evidence that the large draft would in reality be more open in the legs, although from a casual glance at the draft—taking the boundary or side line into consideration—the trousers might appear closer than the smaller size or thirty-six seat. Of course there are causes which vary these conditions slightly, but not sufficiently to have any material effect on the hang of the trousers.

The question has been debated many times as to which should be the primary construction line in drafting trousers, but the debaters mostly fail to grasp the idea that there is practically no difference between the side, centre or front line, as they must be parallel with the boundaries of the figure and ALL travel in the same direction. For instance, if we adopt the side line we attach quantities in the direction of the other two, and if we take the front line our operations are directed to the side, and if we adopt the centre line our operations take opposite directions from that line. The only thing about which to be particular is to see that these lines, however used, travel in harmony with the imaginary lines running through the figure, seeing also that the leg cuts the centre of the draft.

We often read of the terms "open" and "close," but these terms, strictly speaking, cannot be applied only in error, because if a draft is correct the terms have no application, from the fact of the draft being right. The terms can be used in a technical sense to describe a departure from an original for a specific purpose, but the effect produced is a defect, and if a perfect system was introduced there would be no application of the terms at all, for even the very admission of them prove that one defect is introduced to cover another.

We will just suppose a trousers cut upon what is termed the "open" principle (see *Diagram 2*).

When the leg was passed through the trousers the natural hang of the material would be outward and the consequence would be that the leg would force the material in its own direction, which would have the effect of creating creases all up the leg seam when on, to the extent that the trousers were unnaturally opened. The very opposite would take place in a too close cut trousers. The leg again being the active member it would force the material in its OWN DIRECTION.

See Diagram 3.

If I were to have the choice between these two evils, I certainly should incline to the close cut, as the fork and leg seam would present a better appearance in walking, as the material in being forced to the side would not be so conspicuous, owing to there being more length and freedom in the side seam, consequently the evil can be better tolerated.

Now in order to construct a system that will adapt itself to the generality of figures, we must think out the imaginary lines before referred to, in order to obtain a right conception of what is required. Not only must we be certain of the actual construction lines themselves, but the boundaries of the figure must be taken into consideration or the trousers would become too large or too small. The material must extend to, and not beyond, the superficies. The covering must be complete as to limit, including seams, and the usual amount for ease and style.

We often meet with trousers, and other garments as well, which have the appearance of being well cut and well balanced, but they sometimes happen to be too large or too small. This shows that the measures were not correctly taken, otherwise they would have been first-rate garments.

If we glance at *Diagram 1* we have a representation of this defect. The trousers are well balanced, the leg goes straight through, but there is too much material in the fork and in consequence there would be a lot of stuff in the lap when sitting down, with probable creases from the inside knee to fork points. This often arises from using divisions of the seat

when the figure is not of the normal type. The sum total of the seat may be the same, only in this case the trousers would be close, or tight, upon the hips and loose in the fork and back seat.

Diagram 2 shows the relation between the direction of the leg and the material when trousers are cut more open than the figure requires and the consequence would be a displacement of material when the figure was in actual motion.

Diagram 3 shows the result of trousers being cut closer than is necessary, the consequences being just the reverse of the open cut.

It therefore shows that the boundaries should be well defined by correct measures, thus avoiding too much or too little material, which will of itself create a defect even in a well balanced and properly constructed system.

I have referred to Diagrams 2 and 3 a second time to show what a mistaken idea it is to cut trousers more open and close than is actually required, unless the departure takes place to meet some extraordinary demand of the figure.

I will now endeavor to show in a plain and simple manner, what I consider to be the proper systematic construction of trousers. My experience has been very extensive, and I am conceited enough to think that the system about to be described will produce a garment for the majority of figures, with little or no variation, unless for some extraordinary purpose.

The best trousers for ordinary wear is a fairly straight cut with just as much seat angle as the construction will naturally produce. Of course any angle may be given, but this is always accompanied with a defect, although the defect so produced may be less in comparison to the good done in shifting the angle, and which perhaps was done for a specific purpose, as in the case of a workingman's trousers, or where absolute ease was the first consideration.

In laying down this system I would beg of the reader to use the small drafts for reference and to produce from them large ones for the full development of it, as small drawings do not convey to the mind what might be termed the "go" of the whole thing. I have been most

painstaking in the construction of this system, which I have hitherto kept for my own private use.

For the systematic construction see *Diagram 4.*

Rule A O X.

O to X is the side leng'h; X to F, two inches more than half the leg, eighteen; and on to B, the full length of leg, thirty-one. Square B C, F D and M P.

From B to 4, one-ninth of total seat, four inches; B to E, one-fourth of seat, nine inches; point 6 is half way between 4 and E; point 5 is half way between 6 and 4.

Square down from 5 to W and up from 6 to N. E to C is same as 6 to E, with a seam added (or the correct and best way is from B to C half fork measure and half inch). Square up from E to T for fly line. Make from T to O one-fourth waist and seams, eight and one-half.

Lower one-half or three-quarters at T (unless for very large waists when T would have to be raised as the waist increases). Nicely curve from T to C, particular care being taken not to hollow the curve too much, and a good dress to be taken out to allow the right side to go clear.

From V to D, one-ninth of total seat and seam, D F half knee measure.

P to M, one inch less than half the bottom measure, and finish topsides as diagram.

THE UNDERSIDES.

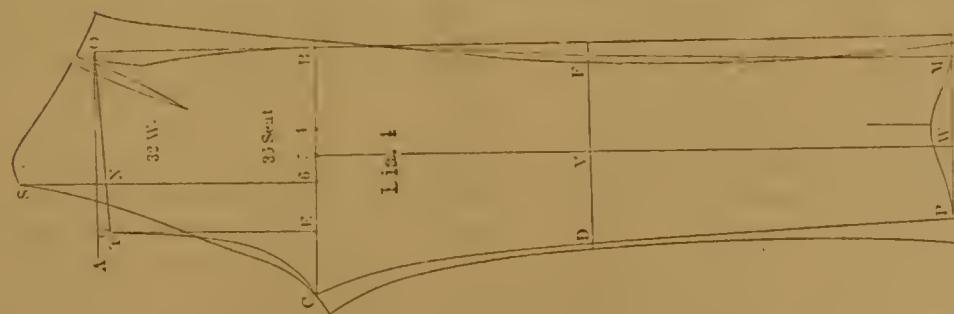
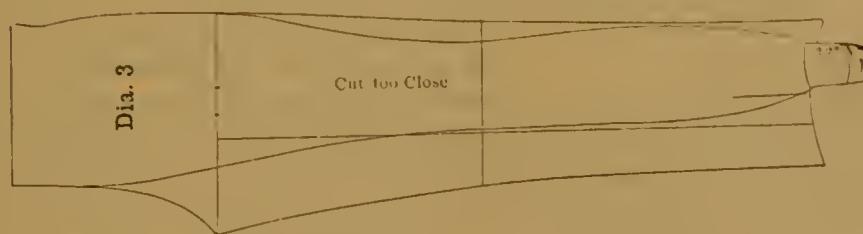
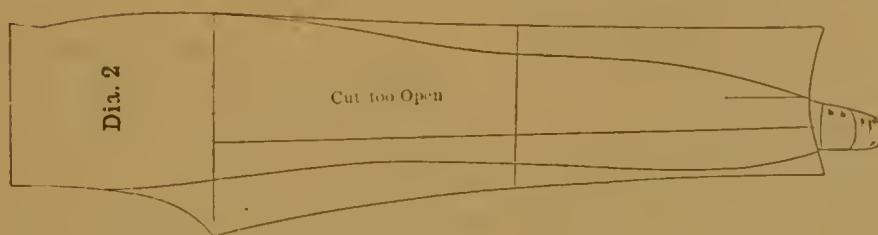
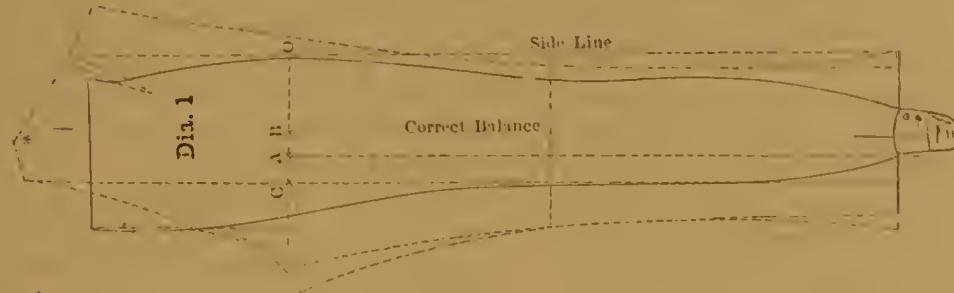
Lay down the top sides as conveniently as possible (so as not to waste the material) and continue the line from 6 to S, and from N to S make one-ninth total seat, four inches, and curve seat line from S to C, overshooting C about one inch, more or less (if desired very easy or close). Mark out two seams at D and rule the underside leg as shown, giving quite two-thirds of spring outside P and one-third outside M. Make up total waist, allowing for a good sized cut to be taken out, the seat to measure one and one-half to two inches more than total measure to allow for ease and making up, and complete the draft as diagram.

Now the system as here given is not only effective, but it is arranged in a simple manner so as to be easily understood by the most inexperienced student. Systems that are not easily arranged certainly are not easily understood.

Garments of every description, in my opinion, should always be drafted from the square because any departure therefrom can now readily be detected.

Sometimes we meet with systems containing tremendous curves and also a very wide

SHOWING OPEN AND CLOSE CUT.



seat angle. Now it follows that if very curved lines are sewn to very straight ones the effect must be bad, for when this is done the iron must rectify the error and pressing and shrinking has to be carried to an enormous extent.

If very much ease is wanted in trousers it is very absurd to angle the seat unnaturally; better infuse a little more size, a little more fork or take out a large cut behind. Increasing the seat angle only produces discomfort, pressure and creases; because, in angling the seat, the room in effect is not produced in straight lines, whereas the motions of the figure travel in straight lines, either in a horizontal or perpendicular direction. The secret of ease in the act of sitting down is to get the creases under the ball of the seat in straight lines (across) and identically the same as those found on the body in that locality.

We also meet with systems where the attachment of the undersides to the topsides is so outrageous that shifting the balance marks and sundry little dodges have to be resorted to to make the trousers at all presentable. There is no earthly reason why this should be done if the draft is maintained in the square, so as to allow the material to enjoy the same privilege of being square.

ERECT AND FORWARD FIGURES.

Very little attention will set this matter right, as the departure in either of these figures is not so great as might be supposed. If the figure stands very erect, shorten the undersides a little. This can be done by taking out a small wedge in the centre of seat to nothing at side seam and this will remove the surplus material pressed back by the figure overshooting the normal.

A small wedge might also be inserted in the centre of fly line to nothing at the side seam to provide for the convexity of the figure in front (which would be about two-thirds, apparently, or not quite so much as the concave behind).

Ah! Here is an admission, as the letting in of a wedge in front is very near in effect to the receding front. In fact, to recede the front and give more length to the top of fly line would be about one and the same thing.

But it does not follow that because the front waist is prominent that the receding front may be always indulged in. The receding front or the fact of letting a wedge in the centre of fly line is only admissible, in my opinion, in special cases, and that is when the perpendicular or centre of gravity is overshot in comparison with the normal figure.

In a case like this (which applies either way, as the forward figure must receive the very opposite treatment to the erect) the lines of the figure are bent out of the straight, which allows the lines of the draft to be bent also.

THE ADVANTAGES OR DISADVANTAGES OF THE FORWARD OR RECEDING FRONT.

In discussing this question we may particularly observe that many cutters are in favor of the former theory, while others assert the advantages of the latter. We might further observe that unless corresponding changes resolve the two into one and the same thing, that it is practically impossible to make out that both these extremes are right. If the forward theory is correct, then the receding theory is not. On the other hand, if the receding theory is right the other must give way, and if by some change or other in the construction both ideas have resolved themselves into neither theory. The notion, therefore, of the forward or receding front is nothing but a notion, from the fact that both supposed methods produce a fit.

Every figure we meet with can be contained in the square, i. e., so far as the boundaries are concerned in the process of construction, but the lines contained in the figure may become bent, as in the case before mentioned; when, in my opinion, the effect of both a forward and receding front may be admitted, but then the introduction had better be done in the form of wedges after the draft is drawn. By this means for stooping or erect figures the changes required are kept more under control than to recede or forward the front, because by inserting or taking out a wedge, the effect is produced all at once, while by the other process the top of fly has to be raised or lowered and it may be that the receding portion and the raising or lowering portion may not be exactly

equal as it would be in the case of a wedge. My opinion is that unless the figure be either stooping or erect, or when the waist exceeds the seat, we must confine ourselves to ordinary construction. But should the waist exceed the seat, i. e., the boundary lines of the draft (which we limit to the seat), the extra size must be introduced, but it does not follow that the introduction should take place in the front any more than at the side. If it were all put on the front the garment when on would get a share of the surplus forced back to the detriment of the same, which would be considered a defect. Certainly the shape of the fly line should follow the form at that point, but never give to the front more than its share of the excess of waist over the seat.

THE EFFECT OF A TOO FORWARD FRONT.

(See Diagram 10.)

In looking at this diagram it will be seen that line X X represents the front boundary of the figure and the dotted lines in front of the fly line is what we term a forward front.

Now if extra material is placed in front of X as at O it will be seen that it exceeds the boundary line and in marking off the topside of waist we are obliged to reduce the same amount at "O." The effect of this would be, as the fork is held fast at C with a corresponding square at B, point O would be forced back again to X, i. e., the material would be compelled to go to X on account of the waist being made the same size as the figure and a defect would be seen at point E, or midway the length of the line forced back. This defect would appear as if a wedge required taking out, but if the waist of the trousers was made up larger than the size of the figure the surplus material would remain in front of X, and the person wearing them would be able to look down inside the curve of the bottom of the fly.

I have often seen the defect when one could take up a handfull of stuff in front without moving the trousers in any other part, but as I have said before, this could only be done when too large in the waist. On the other hand, if the waist is made up the right size the defect must appear at E. When the waist exceeds the seat the result is quite different as the form

goes over the line at X without a corresponding change at C, which probably remains the same; the consequence is as the figure goes forward at X the material must go with it and to give relief to the fly line gradually to the fork we must raise the top of fly line at X above the square at "O" as every trousers cutter knows. If this were not done the pressure would be too great in the centre of fly line.

THE EFFECT OF A TOO RECEDING FRONT.

Just the reverse would happen in effect if the front receded, as in Diagram 9, from X to O, there being no necessity to recede the front beyond the boundary line X. But if the front was receded, as from X to O, a pressure would be felt at A with a surplus of material at M, which would form a very bad defect in small waisted figures.

It has often been urged that if the front is forwarded in large waisted figures it ought to be receded on the same principle, in very small waisted ones. There is not, however, much reason in such a statement because the extension of the one, and the depression of the other are not identical, because the greater depression does not happen in the same locality as the greatest extension.

Now there are one or two ways in which we must consider the advantages or disadvantages of the forward and receding front in relation to large and especially prominent waisted figures. I think the question is chiefly considered when this is the case. In both processes there is an advantage and a disadvantage. The question only remains whether the effect produced is to be for comfort or appearance. I wish to lay particular stress upon these two requirements, as neither process will produce the same result.

In the case of large waisted and prominent figures to forward the front would give the smartest appearance in standing, but in this process there would be a defect at E, in the form of a little surplus material and which is all the more apparent because in large waisted figures the hips are flatter than in ordinary figures, but, of course, this would be regulated by the amount forwarded. On the other hand if absolute comfort was the first consideration

I should certainly recommend the receding front (see diagram 9.) because in receding the front from X to O it more than takes that amount from the boundary of the figure being in advance of the construction line of seat. Therefore in making up the topside waist the same amount (together with excess) would have to be carried to "O" that the front was receded and the effect when on, (that is when O was forced back to X as the figure would go beyond X, and especially if top of fly-line was raised at the same rate as in the forward front) would be that the material would be forced down the fly-line, the climax being reached in the center of the line, with a corresponding pressure at A. It is here that we find a greater advantage in the receding over the forward because in the forward front process on account of the hips being flat at E the surplus material thrown there appears to a disadvantage, while in the case of the receding process, the very fact of the hips being flat, relieves the pressure that would otherwise in ordinary figures be a defect in the locality of A.

Therefore in summing up these two important considerations we must first discover whether in the process of construction we are to aim at *effect* or *comfort*.

I have endeavored to give both these points impartial consideration leaving the result to those who read these pages as *they* then can decide, perhaps to their own satisfaction, which of the two processes they would prefer to adopt.

The necessary changes to be observed in providing for the *peculiarities and deformities of customers*.

In discussing this question, to which I have before alluded, we can only arrive at one conclusion, and that is, as the altitude and motion of one man is similar to that of another man, there cannot possibly exist any very serious departures from a properly constructed method of producing a well cut trousers.

If we take the average of general construction, we shall find that the peculiarities in figures are not so very extraordinary, and deformities are even more rarely encountered. If we take a very careful survey of the order book we shall find that the situation of peculiarities, and even deformities, exist to a greater

extent in the imagination of the client himself than could be traced in the pages of that book.

We have certainly to deal with a variety of form and size, but even then there is a certain amount of symmetry and proportion associated with every figure. If it were not so the eye would become distracted and the outline of every form would convey to the mind the impression of deformity.

The necessary changes therefore that are actually required in the construction of trousers for different forms are not so very extensive as we are sometimes led to believe. The greatest change is chiefly confined to the region of the seat and fork. Either the seat to a given measure is prominent with correspondingly flat hips, or it is flat and poor with prominent hips. In the one case the fork measure would be greater, indicating where the change must take place, and in the other case the fork measure would be less indicating where the change must transpire. This can hardly be called a peculiarity as it is so very commonly met with in daily practice, and is simply a process to give and take. If the fork is diminished the hip room must be extended and the total seat measure made up. The difference of excess of waist, etc., over or under the seat measure I have already dealt with under the heading of forward and receding front.

In the event of deformities one cannot lay down any definite rule of treatment because we cannot tell what the character of the defect would be, but if the cutter were master of the principle of construction the defect, when presented to him, would suggest the remedy.

We might go on forever imagining possible deformities, but it would be useless to do so, from the fact, that when a deformity did really present itself, the characteristics of the same would be altogether different to the one suggested.

In dealing with the last question, viz: defects and remedies, I can only urge that defects are often more apparent than real. What I mean is, that we might go on forever enumerating a series of defects when really their origin might be traced to one cause and in just proportion to the cause would be the extent of the defect.

Defects of any nature may safely be dated

from wrong construction, and in just proportion to the notation of the correct principles of construction we get a corresponding amount of error.

PRINCIPAL OBJECTIONS.

The principal objections we meet with in a finished trousers, are a sense of pressure and general discomfort with a visible amount of misplaced material, known as creases, and in these two words, discomfort and creases, is the sum total of defects in trousers. Yet, although the sense of error is contained in these two words there are no more than two or three causes which bring them into existence.

My opinion in writing upon this question is that it is a great mistake and a waste of time, to suppose that any real good can be supplied from a dissertation on defects in trousers and their remedies. The great secret we have to trace is quite of an opposite character. We know that defects exist and a great many of them, and we also know that perfection in cutting does *not* exist. Therefore our attention should not be directed to what we are already acquainted with, but it should be directed to the discovery of what we do not know, rather than to invite a return of those errors that have existed all along.

In order to carry out the conditions of the essay I shall endeavor to trace the cause and to suggest a cure for the chief defects in trousers, for as I have mentioned before, the numerous defects apparently met with are the result of practically the same cause, since the cause being of a greater or lesser magnitude produces in turn defects of more or less importance.

There is also the fact that there are but two conditions in trouser cutting, the right way and the wrong way. The right way would suggest perfect construction and the other a general defect.

HORSE SHOE CREESES.

One of the greatest defects in trousers (as shown in diagram 6) is the presence of a number of creases, known as horseshoe creases, taking diagonal directions, the situation being at the back of the leg from the seat down to below the knee. This defect arises from a too wide angled seat with too much openness in the underside leg. The remedy would be to cut a straighter seat line and a closer under-

side leg, with perhaps a shade more fork. If the alteration is required to be made in the garment or on the pattern proceed as suggested in diagram 6; the dotted lines being the alteration.

The second defect of importance is a sense of pressure and general discomfort when bending the knee or in sitting and stooping; with a series of creases from the center of fork down past the knee at the same time the trousers being prevented from going clean up into the fork. This defect is represented in diagram 5.

The cause of this very common defect is too little fork room or too small a diameter. The remedy would be as shown in diagram 7, the dotted lines suggesting the curve.

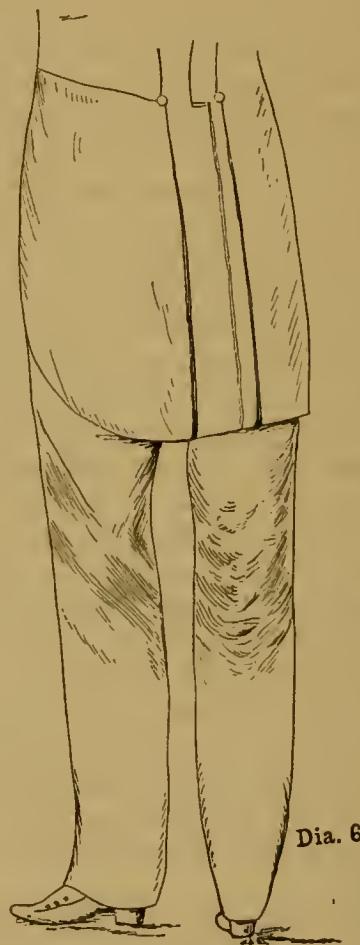
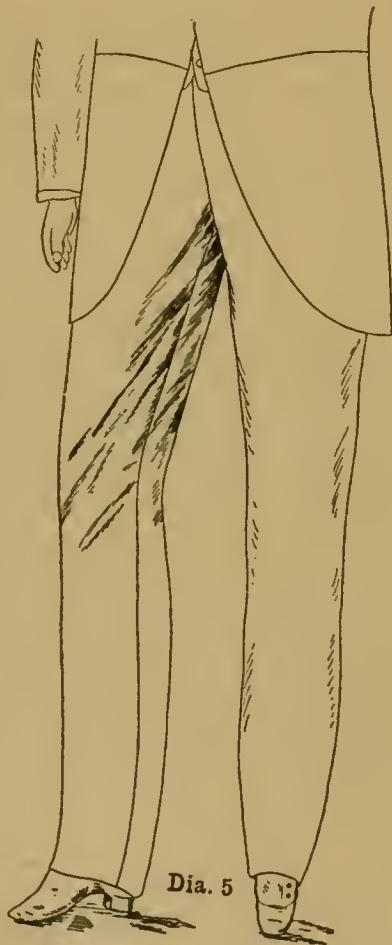
The third defect is a pressure of the trousers on the calf (see diagram 11) with a series of creases as shown across the leg. The cause of this defect is too short a topside, probably owing to the attitude of the figure. The remedy for this defect would be to open the pattern at B and let in a wedge to nothing at side. Some say that the wedge should be let in at A but this is an error; because if let in at A the effect could not go beyond B as the fork is a fixed point and the material will square itself in a line with the fork. If on the other hand the wedge is let in at B just below the square of the fork the effect will be felt all down the leg and the defect will disappear. Others have suggested that the backs should be shortened to relieve the fronts but this method cannot effect a cure as *more* length is required in front which could not be introduced by simply shortening the backs.

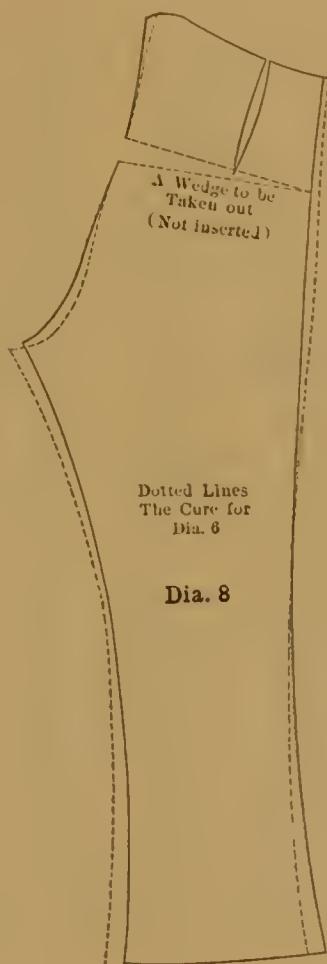
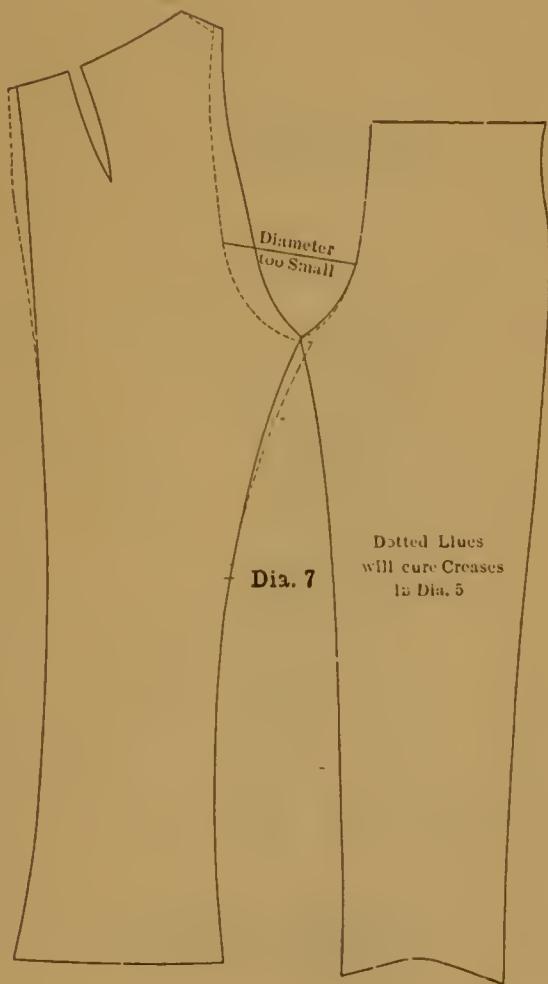
These really are the three important defects caused by wrong construction, together of course with a too open or too close cut.

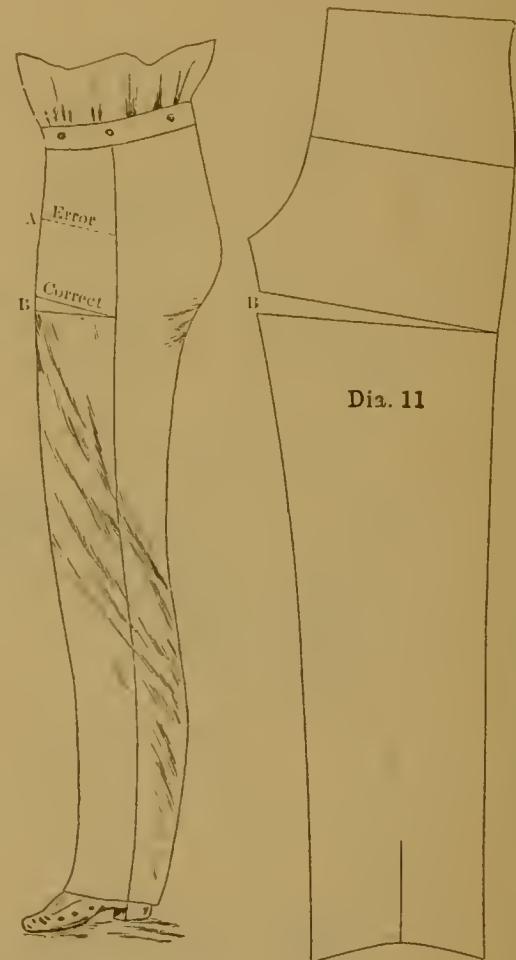
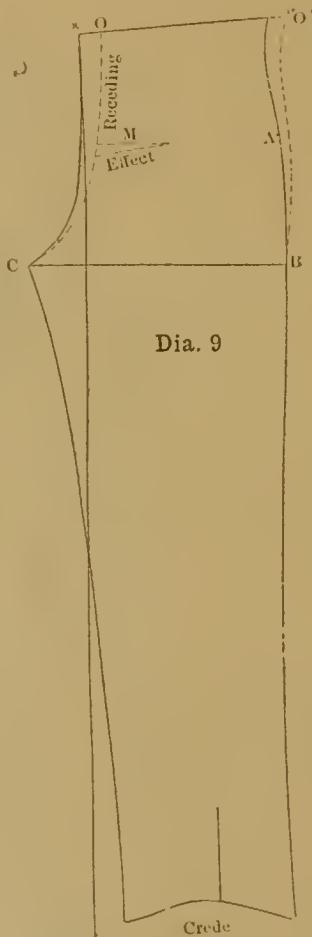
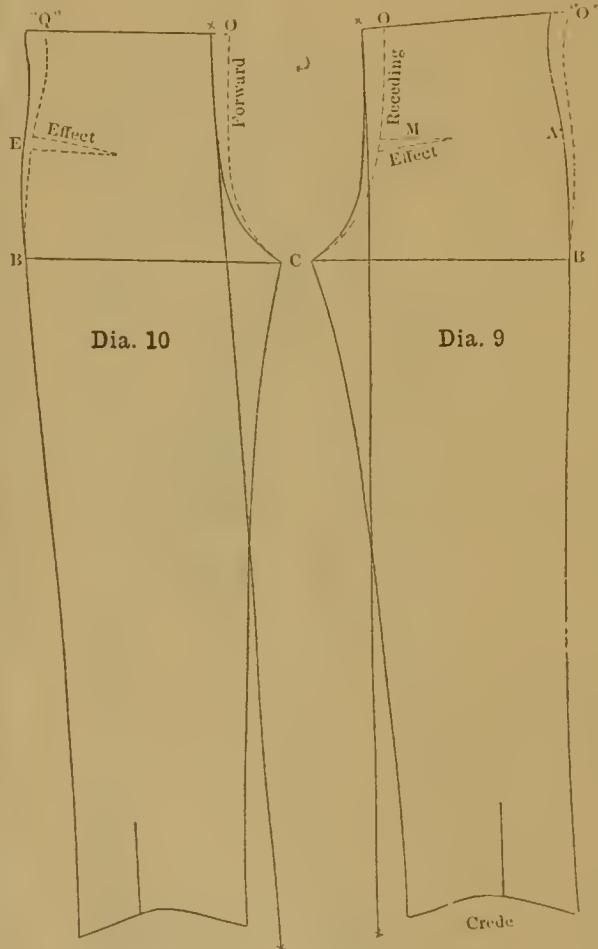
All other defects mainly belong to the same causes, some being more apparent than others.

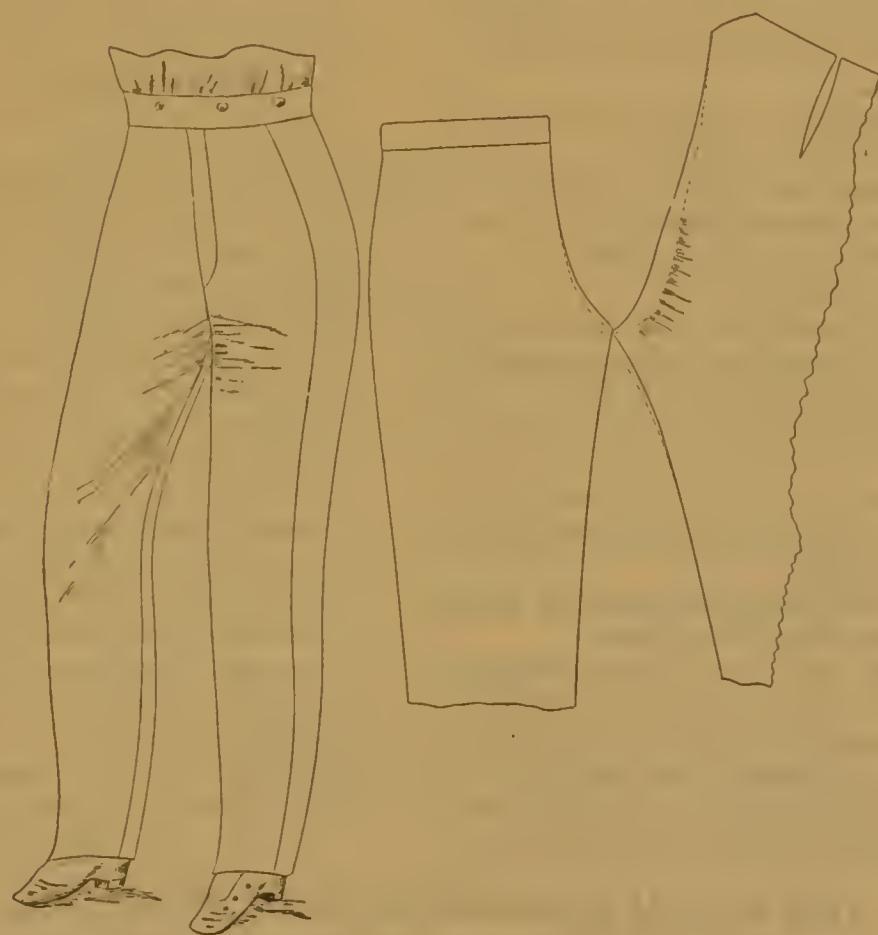
The true remedy for defect must after all lie in construction, and to this end our attention should be given, rather than to waste time in hunting up defects that have existed for ages.

In concluding this essay I may say that my aim has been to give a plain, straightforward reply to the questions laid down rather than to give an elaborate and high flown treatise without any real practical value, and I would urge a reformation in construction, worked up to, by experiment which could be managed and carried on, successfully I believe, by the united efforts of the whole of the Custom Cutters and Foremen Tailors' Societies.









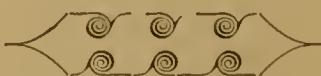
APPENDIX.

Minor Defects and Remedies.

1. Creases across top of thigh.
Too small in the fork, cut too close or drawn in when sewing leg seam.
2. Surplus material in the lap.
Too straight and short in seat angle. Crook the seat; let out side seam same amount, and if possible take out a larger cut behind.
3. Side seams coming too far over on to the boot
Close the under side legs.
4. Too much loose cloth at back of trousers.
Give more diameter across the seat and let out side seam same amount.
5. Creases below the knee.
Generally from insufficient room in the body. Give more for room or open the topsides a bit more.
6. Loose stuff under the knee and creases over the knee.
Straighten leg seam, take off same amount at side seam at knee and give a wider seat angle.
7. Bagging at the knees and pressure from outside of knee when sitting down.
Too little seat room and too small a fork. Give more room at both places.
8. Horseshoe creases are formed by the underside being too long for the topside.
Shorten undersides and stretch and shrink under the knees, or they may be caused by the underside being cut too open; reduce at side seam, adding what is taken off at under leg seam.
9. Trousers standing away from boot behind.
Trousers cut too close or badly made up at the bottom and perhaps too hollow in the leg seams.
10. Trousers tight in the fork.
Too little diameter in seat; give more room at fork points.
11. Trousers apparently too short when made up to measure. (a) Too little hip room. (b) Too hollow at back of seat. (c) Too straight and short a seat.
12. Why do defects appear in trousers at all?
Firstly—Because when excessive, the construction is bad throughout.
Secondly—Because by the motions and angles, peculiar to the body, creases arise from the fact of the trousers or covering being larger than the legs to be covered, and the fact of the material being larger and in excess of the figure the angles and lines in the material (caused by the motions of the body) are longer in proportion to the figure and not being the same size and attached to the figure, the extensions are greater to the extent of the difference in the size of material and the size of the figure.

THE EXCELSIOR METHOD IN PRACTICE.

The question has often been asked me why I do not use a thigh measure? I answer: Because I claim the seat bears a closer relation to the crotch quantity than the thigh. When I find a gentleman with a flat inside thigh and a flat seat with large hip-joints, I cut the crotch one size smaller and add that quantity, or one size, on back parts at dotted line as represented in Diagram 1. For example: If the seat measures 37, I cut it 36 fork and add the one-half inch at seat as above referred to in Diagram 1.



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